## **ABSTRACT**

There is proposed a methodology for specifying the behavior of reactive systems, which is based on "Playing in" the system's possible scenarios. The use of this methodology is shown by building a practical "Play In Engine" tool based on the methodology. Users will be able to connect their Mock-Up GUI to the tool by "playing" their GUI and specifying the required system reactions in a simple and intuitive manner. As this is being done, the system will automatically generate behavior specifications in the language of Live Sequence Charts (LSCs), or any other suitable requirement language, such as various temporal logics or timing diagrams. On the basis of the system behavior specification, the user can play out scenarios through a play out engine.